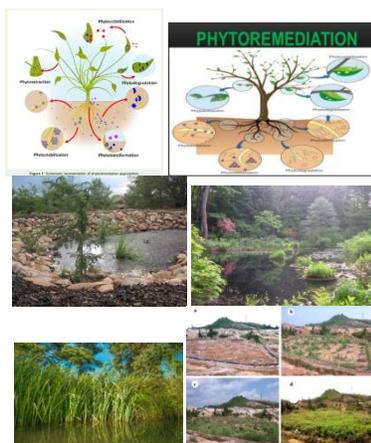


## ICAR Sponsored Short Course Training On

### Physiological approaches to phytoremediation: advances, impacts and prospects

(10 Dec 2018 to 19 Dec 2018)



#### Course Director

Dr. Ajay

#### Course Co-Directors

Dr S Ramana

Dr R. Elanchezian

#### Sponsored by

Education Division

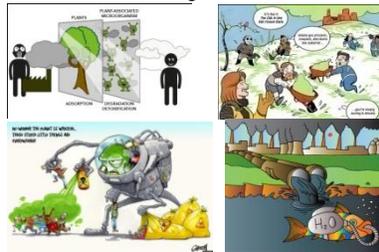
Indian Council of Agricultural  
Research, New Delhi-110012

#### Organized by

ICAR-Indian Institute of Soil Science  
NabiBagh, Berasia Road Bhopal,  
Madhya Pradesh 462038

## Background

Since the beginning of industrialization, humans have used the soil as a contaminant sink. Over the time, the amount of pollutants disposed into soil has increased. The world is "going green", and phytoremediation is an environmental cleanup technique that means going green literally as well as figuratively. Phytoremediation is "the use of green plants to remove pollutants from the environment or render them harmless." It was first used in the early 1990s, and has been tested at more than 200 sites nationwide. It can be used to clean up the soil, surface water, or groundwater.



Phytoremediation is accomplished by growing particular plants in the areas of contamination, and allowing them to accumulate the contaminants from the soil/water through their root systems. Plants chosen for this purpose must acclimate to local climate. be able to clean or diminish the contaminant of that area They must also have deep dense root structures, fast growth rate, high biomass, the ability to take in large amounts of water, and must be easy to plant and maintain? Native plants are used whenever possible.

Conventional remediation methods include: soil incineration, excavation and disposal, soil washing, flushing and stabilization with electro-kinetic systems. All of these are characterized by high costs, intensive labor and irreversible changes to the soil, able to cause secondary problems and dangerous disturbance to the local ecological system. By contrast, phytoremediation is easily implemented, involves minimal maintenance costs, and also enriches the soil with nutrients and organic matter from the plants - resulting in less contamination and natural fertilization.

## About ICAR-IISS

The Indian Institute of Soil Science (ICAR-IISS) was established on 16th April, 1988 at Bhopal with a mandate of "Enhancing Soil Productivity with Minimum Environmental Degradation". To accomplish the mandate of the institute, it has given the priority to soil health related issues faced by farmers and other stakeholders. IISS has emerged as a leader in basic and strategic research on soils in the country. It has achieved significant success in the areas of integrated nutrient management, impact on soil under long-term cropping, technology for preparation of enriched composts, soil test based nutrient prescriptions, generation of district-wise GIS based soil fertility maps, organic farming practices, carbon sequestration in soils, sink capacity of soils for heavy metal pollutants, recycling of wastes, soil microbial diversity and biofertilizers, quality standards for municipal solid waste composts etc.



The institute is mandated to take up the emerging challenges of increasing food-grain production and ensuring food and nutritional security from shrinking land resources, characterizing and conserving large soil-biodiversity for appropriate deployment in agriculture, achieving self-reliance in crop fertilization through indigenous mineral and by-product sources, developing efficient technologies for waste recycling, maintaining soil quality and ecological balance, and developing energy efficient agriculture and sequestering carbon by reorienting its research pursuits addressing the emerging issues viz., enhancing nutrient and water use efficiency; sustaining soil and produce quality; soil biodiversity and genomics, climate change and carbon sequestration; minimizing soil pollution etc.

## Course content

The course has been designed to give participants a complete exposure to the recent advances in phytoremediation aspects about the urban, industrial, mining and other environmental pollution covered in both theory and practical sessions.

- Improving Phytoremediation of Soil Polluted with Oil Hydrocarbons
- Phytoremediation of Soils: Prospects and Challenges: Soil Contamination with Metals
- Removing Soil/Water contaminations through Biological Technologies
- Phytoremediation and Biofortification in relation to Animal Health
- Phytoremediation for Green Energy
- Phytoremediation of Hazardous Wastes - landfill leachate
- Organic phytoremediation: rhizodegradation or rhizoattenuation
- Ganga Pollution at Kanpur - Phytoremediation
- Nano Technology
- Improving Phytoremediation by Biotechnological Approaches
- Phytoremediation of Radioactive Contaminated Soils
- Phytomanagement of Mine Waste
- Advances in phytoremediation: Role of Transgenics

## Eligibility

The officer in the cadre of Scientists/Assistant Professors/Subject Matter Specialists or equivalent and above from ICAR institutes, SAUs, CAUs, KVKs, CSIR, Commodity boards, Agricultural faculty of AMU, BHU, Vishwa Bharati and Nagaland University who are actively engaged in research, teaching and demonstration in the areas of Soil Science, Plant Physiology, Plant breeding and Genetics, Agronomy, Microbiology, Environmental science and other relevant Agriculture and Horticulture subject are eligible to attend the Short course training. The total number of participants will be restricted to 25. For speedy disbursement of selection letters, participants email ID requested to

apply online at CBP portal and provide email ID and FAX number.

## Duration of shortcourse

Duration of the Short Training is 10 days from 28 Nov to 7 Dec 2018 (both days inclusive). The participants are expected to arrive at ICAR at IISS Bhopal latest by the evening of 27 November 2018 and can leave after 17.00 hr on 7 December 2018.

## How to apply

Interested candidates may apply online by registering at CBP Portal (<http://cbp.icar.gov.in>) following the guidelines given there. After filling the online application, applicants are requested to take a printout of the same and get it approved by the competent authority of the organization. Upload the scanned copy of the signed application to the CBP portal. Send the hard copy duly forwarded by the employer by post to the Course Director on the address given below along with a sum of Rs. 50/- as registration fee (non-refundable) in the form of postal order/DD drawn in favour of Director, ICAR-IISS payable at Bhopal. Selected candidates will be informed through online CPB portal and e-mail.

## Important dates

Last date for receipt of application: 30.10.2018.

Intimation of selection: 15.11.2018

## TA/DA

Participants will be paid to and from fare for journey performed by the shortest route by rail or bus (only by public transport) as per their entitlement but restricted to the maximum of AC- II tier train fare as per ICAR norms. If any participant chooses to travel by air, their claim shall be restricted to AC-II tier train fare only. Participants are required to produce originals of the rail/bus/air tickets for claiming.

## Boarding and Lodging

Participants will be provided accommodation, wholesome meals and refreshments. However, local participants will be provided lunch and intersession's refreshments only.

## Location and climate

Bhopal, a sprawling and picturesque capital city of Madhya Pradesh, is well connected by air, rail and roadway to different parts of country. Participants travelling by train/bus should alight at Bhopal railway station/Bhopal bus stand from where taxi/auto -rickshaws can be hired to reach ICAR-IISS Campus located near Karond Chouraha on Berasia Road at a distance of 8 km from railway station and 7.5 km from Bus stand. The Raja Bhoj Bhopal airport is located at a distance of 8 km from the Campus. The participants are advised to make their return journey reservations at their end before leaving for Bhopal. The climate is pleasant during the month of September, warm (~30°C) during day time and cool in the night (~20°C)

## Contact address

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